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[54] **NEURAL NETWORK ARCHITECTURE FOR GAUSSIAN COMPONENTS OF A MIXTURE DENSITY FUNCTION**

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ABSTRACT

A neural network for classifying input vectors to an outcome class under the assumption that the classes are characterized by mixtures of component populations having a multivariate Gaussian likelihood distribution. The neural network comprises an input layer for receiving components of an input vector, two hidden layers for generating a number of outcome class component values, and an output layer. The first hidden layer includes a number of first layer nodes each connected receive input vector components and generate a first layer output value representing the absolute value of the sum of a function of the difference between each input vector component and a threshold value. The second hidden layer includes a plurality of second layer nodes, each second layer node being connected to the first layer nodes and generating an outcome class component value representing a function related to the exponential of the negative square of a function of the sum of the first layer output values times a weighting value. The output layer includes a plurality of output nodes, each associated with an outcome class, for generating a value that represents the likelihood that the input vector belongs to that outcome class.

10 Claims, 2 Drawing Sheets

